

REMARKS

Claims 1-16 and 72-80 are pending in the application. Claims 1-16 and 72-80 stand rejected. Independent claims 1 and 72 are being amended. Dependent claims 5 and 7 are being amended. No new matter is believed to be introduced by way of the amendment.

Rejections Under 35 U.S.C. §112

Claims 5 and 7 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out the subject matter of the invention. Specifically, claim 5 includes the terms “the level of the extended signal,” which is said to be indefinite. Corrections to claim 5 has been made in the Claim Listing above to replace the term “the level of the extended signal” with the term “a gain of the extended signal.” Support for this amendment can be found in the original application, at least on page 23, lines 10-14.

Claim 7 includes the terms “a level of the generated signal in the extended signal,” which is said to be indefinite. Corrections to claim 7 has been made in the Claim Listing above to replace the term “a level of the generated signal in the extended signal” with the term “a gain of the extended signal in the output signal.” Support for this amendment can be found in the original application, at least on page 28, lines 6-9.

Accordingly, claims 5 and 7 are believed to have overcome the rejections under 35 U.S.C. §112, second paragraph. Therefore, Applicant respectfully requests withdrawal of the rejections of these claims.

Rejections Under 35 U.S.C. §102(e)

Claims 1-5, 8-14, 16, 72-76, 78, and 79 were rejected under 35 U.S.C. §102(e) as being anticipated by Jax *et al.* (U.S. Patent No. 7,181,402), hereinafter referenced as “Jax.”

Claim 1 as amended in the Claim Listing above recites:

An end-terminal device bandwidth extension system comprising:
bandwidth extension circuitry for receiving a signal with frequency ≤ 4 KHz and providing an output signal including a signal with a narrowband component ≤ 4 KHz and an extended component > 4 KHz;
gain control for controlling the power of the extended signal and
relative to power of the narrowband signal
a loudspeaker coupled to the gain control for outputting the output signal,

where the strikethrough words indicate elements being deleted by way of amendment, and the underlined words indicate elements being added by way of amendment. Support for the amendment is found in the specification as originally filed at least on page 21, lines 14-17, which states:

Gain control 32 sets the power of $x_e(n)$ at an appropriate power level so that $x_e(n)$ is not powered too high or too low relative to $x_{rd}(n)$, but rather properly complements the power level of $x_{rd}(n)$ so as to preferably maximize the perceived quality of the resultant bandwidth extended communication signal.

Referring to Applicant's Fig. 3, a bandwidth extension system is arranged to receive a narrowband signal $x(n)$ and provide an output signal $y(n)$. The output signal $y(n)$ includes a narrowband component $x_{rd}(n)$ and an extended component $x_e(n)$. Before forming the output signal $y(n)$, the narrowband component $x_{rd}(n)$ and the extended component $x_e(n)$ are both presented to a gain control block 32, where the gain of the extended signal is adjusted to complement the power level of the narrowband component $x_{rd}(n)$.

In contrast, Jax describes a synthetic bandwidth widening device that is designed to operate to ensure that the power level in baseband in the output signal corresponds exactly to the power level of the input signal. Specifically, as Jax describes in column 12, lines 45-48:

The residual signal widening block must operate in such a way that, despite the increase in the sampling rate, the power level in baseband in the output signal corresponds exactly to the power level of the input signal.

Jax merely describes a bandwidth widening device that is arranged to ensure that the power level in baseband in the output signal corresponds exactly to the power level of the input signal. Additionally, while Jax teaches using the combination of two signals to generate an output signal, Jax's invention has a strict requirement that those two signals have identical power. However, since Applicant's claim 1 controls "power of the extended signal relative to power of the narrowband signal," it distinguishes over Jax in that it will continue to operate effectively, even when the power of the extended signal and the power of the narrowband signal are not exactly the same.

Thus, Jax does not teach or disclose employing a gain control unit that is arranged to control “power of the extended signal relative to power of the narrowband signal,” as recited in Applicant’s amended claim 1.

Accordingly, because Jax lacks a requisite element of claim 1, namely gain control for “controlling power of the extended signal relative to power of the narrowband signal,” Applicant respectfully submits that claim 1 overcomes the rejection under 35 U.S.C. §102(e) for the reasons presented above.

Independent claim 72 is being amended to include the same elements (“controlling gain to control power of the extended signal component relative to power of the narrowband signal component of the output signal”) as amended claim 1. Accordingly, Applicant respectfully requests that the rejection of this claim, claim 72, under 35 U.S.C. §102(e) be withdrawn for the reasons presented above.

Accordingly, Applicant respectfully submits that because claims 2-5, 8-14, 16, 72-76, 78, and 79 depend from base Claims 1 and 72, these dependent claims should be allowed for at least the same reasons as the base claims from which they depend.

Reconsideration and withdrawal of the rejections are respectfully requested.

Rejections Under 35 U.S.C. §103(a)

Claims 6, 7, 15, 77, and 80 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jax in view of Liljeryd *et al.* (U.S. Patent No. 6,680,972), hereinafter referenced as “Liljeryd.”

These rejected claims are dependent from amended base claims 1 and 72. As explained in the previous section, Jax does not teach all of the elements recited in amended claims 1 and 72, namely, “controlling power of the extended signal relative to power of the narrowband signal.” Liljeryd is being applied to Jax based on its alleged suggestion of a user volume control to control information used in the output gain control. Thus, the failings of Jax are not cured by Liljeryd. Thus, it is Applicant’s position that claims 6, 7, 15, 77, and 80 are allowable over Jax in view of 6, 7, 15, 77, and 80 because these claims depend from amended base claims 1 and 72 and should be allowable for at least the same reasons. Accordingly, Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of these claims be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all currently pending claims, claims 1-16 and 72-80, are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By /Mark B. Solomon, Reg. No. 44348/

Mark B. Solomon

Registration No. 44,348

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

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